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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JERRY B. ROBERTS

Appeal 2009-002802
Application 09/835,040
Technology Center 2600

Decided: April 15, 2010

Before JOSEPH F. RUGGIERO, MAHSHID D. SAADAT, and
THOMAS S. HAHN, *Administrative Patent Judges*.

RUGGIERO, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant appeals under 35 U.S.C. § 134 from the Final Rejection of claims 111-164. Claims 1-110 have been canceled. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

Rather than reiterate the arguments of Appellant and the Examiner, reference is made to the Appeal Brief (filed March 4, 2008) and the Answer (mailed May 29, 2008) for the respective details. Only those arguments actually made by Appellant have been considered in this decision. Arguments which Appellant could have made but chose not to make in the Brief have not been considered and are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(vii).

Appellant's Invention

Appellant's invention relates to a force sensor for sensing a touch force applied to a touch surface of a force sensitive touch device. More particularly, the force sensor includes first and second elements including, respectively, first and second capacitor plates. At least a portion of the first element includes an elastic element which permits the first capacitor plate to move. (*See generally* Spec. 6:8-19; 8:10-19).

Claim 111 is illustrative of the invention and reads as follows:

111. A force sensor for sensing a touch force applied to a touch surface, the force sensor comprising:

- a first element including a first capacitor plate at least a portion of which is an elastic element that allows the first capacitor plate to move; and
- a second element including a second capacitor plate opposed to the first capacitor plate;

wherein transmission of at least part of the touch force through the elastic element portion contributes to a change in capacitance between the first capacitor plate and the second capacitor plate.

The Examiner's Rejection

The Examiner's Answer cites the following prior art references:

Frisch	US 5,854,625	Dec. 29, 1998
Figie	US 5,872,561	Feb. 16, 1999

Claims 111-164, all of the appealed claims, stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Frisch in view of Figie.

ISSUES

The pivotal issues before us are whether the Examiner erred in determining:

- a) the obviousness to the skilled artisan of applying the flexible membrane teachings of Figie to the capacitive touch sensor structure teachings of Frisch; and
- b) if so, whether the combination of Frisch and Figie results in the touch sensor structure as claimed.

FINDINGS OF FACT

The record supports the following findings of fact (FF) by a preponderance of the evidence:

1. Frisch discloses (Fig. 2A; col. 6, ll. 13-15) a capacitive force sensing touch pad having a top planar member 14 with a touch surface portion 18 and a capacitor plate 24a that can be formed as copper traces on the surface of the planar member 14.

2. Frisch further discloses (col. 6, ll. 19-20) that the described arrangement of capacitor plate 24a, planar member 14, and circuit elements 30 “permits fabrication of a compact, integrated force sensing touchpad.”

3. Frisch also discloses that the capacitor plate 24a can be “mounted on or integral with top planar member 14” (col. 7, ll. 33-34).

4. Further included in Frisch is a capacitor plate 24b which is integral with frame member 12. Upon pressing of the touch surface 18, the capacitor plates 24a and 24b, which constitute the capacitor 24, are brought closer together, which increases the capacitance of capacitor 24 (col. 5, l. 62–col. 6, l. 2).

5. Further included in the structure disclosed by Frisch (Abstract; col. 3, ll. 43-45) is a spring structure 20 which retains the touch surface in a predetermined position, and which is integrally formed with the planar member and its touch surface 18.

6. Frisch also discloses (Fig. 2A) that spring structure 20 is elevated with respect to the capacitor element portion 24a of the capacitor plate 14.

7. Figie discloses (Fig. 1; col. 3, ll. 55-58) a switch matrix 10 including a forward membrane 12 “constructed of a flexible, electrically insulating, transparent material.”

8. Figie also discloses (Fig. 3; col. 4, l. 66–col. 5, l. 1) that “each of the switch elements 26, when open, acts like a capacitor providing a capacitive coupling between columns and rows.”

9. Figie further illustrates and identifies (Fig. 3; col. 5, ll. 13-36) by row and column number the capacitances associated with each of the switches 26.

PRINCIPLES OF LAW

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. *See In re Fine*, 837 F.2d 1071, 1073 (Fed. Cir. 1988). In so doing, the Examiner must make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966) (stating that 35 U.S.C. § 103 leads to three basic factual inquiries: the scope and content of the prior art, the differences between the prior art and the claims at issue, and the level of ordinary skill in the art). Furthermore,

“there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness” . . . [H]owever, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.

KSR Int’l Co. v. Teleflex Inc., 550 U.S. 398, 418 (2007) (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

ANALYSIS

Claims 111-139

With respect to independent claim 111, Appellant’s arguments focus on the contention that the Examiner has not established a proper basis for the proposed combination of Frisch and Figie. Appellant directs attention (App. Br. 10) to the fact (FF 7) that the flexible membrane 12 of Figie, which is a separate structure from the conductive contacts 14, is described as being made of insulating material. According to Appellant (App. Br. 11), therefore, Figie’s flexible membrane can not have capacitive properties, and

an ordinarily skilled artisan would not find in Figie any motivation to modify the capacitive plates 24a, 24b of Frisch to include a flexible elastic portion.

We do not agree with Appellant. To whatever extent Appellant may be correct that the insulating material construction of the flexible membrane 12 of Figie prevents it from having capacitive properties, we find indisputable evidence within Figie to indicate that the switch matrix 10 as a whole has capacitive properties and functions. For example, Figie discloses (FF 8) that each of the switch elements 26, when open, acts like a capacitor providing a capacitive coupling between columns and rows. Even further, Figure 3 of Figie illustrates and identifies (FF 9) by row and column number the capacitances associated with each of the switches 26. Accordingly, we find that the fact that an individual element of Figie's switch matrix may be constructed of insulating material does not mitigate the teaching value of Figie in suggesting the implementation of a capacitor plate structure with a flexible elastic portion.

We further find unpersuasive Appellant's contention that any combination of Frisch and Figie would not result in the claimed touch force sensor structure since neither Frisch nor Figie discloses a capacitor plate as a distinct element which has an elastic portion. With respect to Frisch in particular, Appellant argues (App. Br. 6) that the flat plate capacitors 24a, 24b, are distinct and separate members from the top planar member, which includes the touch surface 18.

Contrary to Appellant's contention, however, we find that Frisch discloses implementation of the capacitor plate 24a as an integral structure with the planar member 14. For example, Frisch suggests (FF 1) that

capacitor plate 24a can be incorporated as copper traces on the surface of planar member 14. According to Frisch (FF 2), this arrangement “permits fabrication of a compact, *integrated* force sensing touchpad” (emphasis added). Further evidence (FF 3) of this integral construction appears at col. 7, ll. 31-34 of Frisch, which discloses that capacitor plates 24a can be “mounted on or *integral* with top planar member 14” (emphasis added).

Having established that Frisch discloses that capacitor plate 24a can be integrally constructed with top planar member 14, we find further evidence in Frisch (FF 4) that the spring structures 20, which Appellant recognizes (App. Br. 7) as elastic elements which retain the touch surface 18 in a predetermined position, are also integrally formed with the planar member 14 and its touch surface 18. With the above discussion in mind, it is apparent, therefore, that Frisch alone discloses all that is set forth in claim 111, i.e., an integrally formed first element 14 including a first capacitor plate 24a with an elastic portion 20 and an opposing second element (FF 5) including a second capacitor plate 24b integrally formed with frame member 12.

In view of the above discussion, we note that, although the Examiner has relied upon Figie for a teaching of constructing a capacitive plate with an elastic portion, such a teaching is not necessary for supporting the Examiner’s finding of obviousness since it is cumulative to what is already disclosed by Frisch. Further, although the inclusion of Figie is not necessary for a proper obviousness rejection, we find that Figie supplements the teachings of Frisch to buttress the Examiner’s conclusion that the claims are obvious over the combination of those references. Therefore, it is our view that the Examiner did not err in concluding that the combination of Frisch

and Figie renders the cited claims unpatentable and, accordingly, the Examiner's obviousness rejection of independent claim 111, as well as dependent claims 112-139, not separately argued by Appellant, is sustained.

Claims 140-164

We also sustain the Examiner's obviousness rejection of independent claim 140, as well as dependent claims 141-164, which are not separately argued by Appellant, for the same reasons as discussed with respect to independent claim 111. Independent claim 140 differs from claim 111 in that it includes a limitation that the elastic element portion of the first capacitor plate defines an "integral elevated feature" of the plate.

We refer to our earlier discussion where we found that Frisch provides a disclosure of an integrally formed first capacitor plate 14 including an elastic portion 20 and a capacitive element 24a. As illustrated, for example, in Figure 2A of Frisch, this elastic portion, i.e., spring structure 20, is elevated with respect to the capacitor element portion 24a of the capacitor plate 14 as claimed (FF 6).

CONCLUSION OF LAW

Based on the findings of facts and analysis above, we conclude that the Examiner did not err in rejecting claims 111-164 for obviousness under 35 U.S.C. § 103(a).

DECISION

The Examiner's decision rejecting claims 111-164 under 35 U.S.C. § 103(a) is affirmed.

Appeal 2009-002802
Application 09/835,040

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv) (2007).

AFFIRMED

babc

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